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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10 009,656	03 26 2002	Karl Heinz Arndt	P01,0404	8441

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EXAMINER

PAYNE, SHARON E

ART UNIT

PAPER NUMBER

2875

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
10/009,656	ARNDT ET AL.
Examiner	Art Unit
Sharon E. Payne	2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL** 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 18-20 is/are rejected.
- 7) ☒ Claim(s) 21-34 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of.
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the thermally conductive paste (claim 18), thermally conductive adhesive (claim 18), thermally conductive film (claim 18), the singly angled surface (claim 21), the multiply angled surface (claim 21), the lenses (claim 25), and the LEDs that proceed that are electrically combined into lanes (claims 31 and 34) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 5. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: page 7 at the top refers to Fig. 1A when the drawings do not have a Fig. 1A. Appropriate correction is required.

Claim Objections

4. Claim 20 is objected to because of the following informality: the phrase "particularly a flex board" should not be used in the claim to indicate a subset. The subject matter of the aforementioned clause should be in a dependent claim.

5. Claim 21 is objected to because of the following informality: the phrase "secondary side" should be "secondary surface" in line 2.

6. Claim 23 is objected to because of the following informality: the phrase "particularly copper or aluminum or sheet metal" should not be used in the claim to indicate a subset. The subject matter of the aforementioned clause should be in a dependent claim.

7. Claim 27 is objected to because of the following informality: the phrase "preferably in the form of a polyester or polyamide film" should not be used in the claim to indicate a subset. The subject matter of the aforementioned clause should be in a dependent claim.

8. Claim 31 is objected to because of the following informality: the word "lines" should probably be "lanes" in line 2.

Appropriate correction is required.

9. Claims 22, 24-26, 28-30 and 32-34 are necessarily included due to their dependency.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Roney et al. (U.S. Patent 5,528,474).

Regarding claim 18, Roney et al. discloses an LED array vehicular lamp. The lamp includes a printed circuit board having a principal surface and a secondary surface (reference number 20), the printed circuit board comprising a plastic material (column 3, lines 20-25), a

plurality of LEDs (reference number 12) arranged on the principal surface (Fig. 2), a metallic layer provided on the secondary surface (reference number 26), and a cooling member (reference number 10) connected to the secondary surface (Fig. 2), wherein the printed circuit board is secured to the cooling member with a thermally conductive adhesive (column 2, line 60).

Concerning claim 19, Roney et al. discloses the metallic layer comprising copper (copper layer, reference number 26).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roney et al. in view of Zouzoulas et al. (U.S. Patent 5,059,778).

Regarding claim 20, Roney et al. does not disclose a flex board. Zouzoulas et al. discloses a flex board (column 6, lines 38-41).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the flex board of Zouzoulas et al. in the apparatus of Roney et al. to provide a flexible electrical connection to an LED.

Allowable Subject Matter

15. Claims 21-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

16. The following is a statement of reasons for the indication of allowable subject matter. The prior art fails to disclose an LED arrangement having the following features:

1) a secondary surface of a circuit board applied to a curved or angled surface of a cooling member, a thermally conductive partial region of a device housing or an automobile chassis such that the plurality of LEDs are arranged in a spatial form determined by the surface of the cooling member as recited in claim 21, or

2) a cooling member that has a curvature adapted to either the outside contour of a motor vehicle or to a partial surface region of an automobile chassis as recited in claim 32.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hochstein (U.S. Patent 5,857,767) discloses a thermal management system for LED arrays.

Chen et al. (U.S. Patent 6,520,669 B1) discloses a flexible substrate mounted solid-state light source for exterior vehicular lighting.

Hochstein (U.S. Patent 5,785,418) discloses a thermally protected LED array.

Shie et al. (U.S. Patent 6,480,389 B1) discloses a heat dissipation structure for solid-state light emitting device package.

Goenka et al. (U.S. Patent 6,490,159 B1) discloses an electrical circuit board and method of making the same.

Ikeda (U.S. Patent 6,501,662 B2) discloses a motor driving inverter.

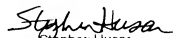
Saitoh et al. (U.S. Patent 6,175,084 B1) discloses a metal-base multilayer circuit substrate having a heat conductive adhesive layer.

Hochstein (U.S. Patent 6,045,240) discloses an LED lamp assembly with means to conduct heat away from the LEDs.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharon E. Payne whose telephone number is (703) 308-2125. The examiner can normally be reached on regular business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703) 305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Stephen Husa
Primary Examiner